

ON DEMAND | NO PRE-REQS

# Data Analysis On Demand

Learn the essential skills to make data-driven decisions.

## OVERVIEW

A comprehensive foundation that equips students with the context, process, and tools to identify and communicate data-driven insights using Excel and SQL.

## IDEAL FOR

- Marketers who want to better evaluate campaigns and ROI.
- Product managers looking to round out user research with quantitative analysis.
- HR teams looking to identify talent insights.

## FEATURES

- ✓ World-class curriculum.
- ✓ Assessment and personal score report.
- ✓ Project-led experience.
- ✓ Access anywhere, anytime.

## TIMING

Estimated 29–44-hour program:

- 16 hours, 15-minute course content.
- 30-minute assessment.
- 10–20 hours of project work.

## CURRICULUM

5 Units | 38 Lessons

1. **Data Wrangling:** Data analysis framework, finding the right data, identifying and handling problematic data, harnessing the power of functions.
2. **Exploring Data:** Data profiling, creating tables, charting and visualizing data, logical functions.
3. **Interpreting Data:** Statistical thinking and design, interpreting data with PivotTables, measuring the relationship between variables.
4. **Communicate Insights:** Telling a good story, designing effective visualizations, planning and building dashboards.
5. **SQL:** Exploring data with queries, refining searches, modifying text query results, null values, aggregation, joining tables.

## ASSESSMENT

20 Questions; 30-Minute Time Limit

- Data Analytics Level 1 (DA1) assessment.



# Welcome to Data Analysis

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Get Started in Data Analysis

## Overview

With so much data generated every day, analytical skills have become critical in the modern economy, whether you work directly with data or manage those who do. In this course, learners will explore the framework analysts use to draw confident conclusions from data, and learn how to use Excel and SQL to make critical business decisions.

## By the end of the learning path, participants will be able to:

- Use Excel and SQL to collect, clean, and analyze large data sets.
- Present data-driven insights to key stakeholders using data visualization and dashboards.
- Tell compelling stories with data.





# Unit 1: Data Wrangling

## Data Wrangling

Introducing Data Wrangling

The Data Framework

Finding the Right Data

Cleaning Your Data

Organizing Data With Functions

## Project

Write a specific problem statement and a clear hypothesis. Use common sources to find potential data sets for analysis, evaluate if they can be leveraged to answer a question, and spot check and clean them using common features and functions in Excel.

## Overview

Analysts spend a vast majority of their time finding and handling dirty data. In this unit, learners get started with the essentials of data wrangling — i.e., the process of finding, sifting through, cleansing, and transforming data so it can be used to answer business questions.

## By the end of the sprint, participants will be able to:

- Describe the Data Framework, and how it's used by analysts.
- Write a specific and testable question given a scenario.
- Evaluate data sets and their variables.
- Determine if a data set can be used to solve a business problem.
- Use Excel's Filter feature to spot check for problematic data.
- Handle missing data based on industry norms.
- Use conditional formatting to identify duplicates and extreme values within a data set.
- Use Excel's Find and Replace feature to fix easily identifiable issues/errors.
- Select a data cleaning strategy based on a given scenario.
- Learn to use and distinguish between VLOOKUP, HLOOKUP, and INDEX MATCH.





## Unit 2: Exploring Data

### Exploring Data

Introducing Exploring Data

Data Profiling

Creating PivotTables for Exploratory Analysis

Exploring Relationships Through Data Visualization

Probing Data With Logical Functions

### Project

Use aggregate functions, summary statistics, and histograms to understand a data set. Make a PivotTable to explore data, choose the appropriate visualization for an analytical output, and select a logical function to ask a complex question of data.

### Overview

Once you've cleaned your data set, it's time to explore it. At this point, analysts start asking broad questions of their data like, "What happened?" and "Why do we think this happened?" In this unit, participants will learn how to use PivotTables and statistics to discover more about what your data is saying.

### By the end of the sprint, participants will be able to:

- Use summary statistics to understand a data set.
- Create a histogram and use it to explain the distribution of data.
- Apply aggregate functions to describe a data set.
- Create a table and understand how it can be useful.
- Make, format, and update a PivotTable in accordance with best practices.
- Conduct an exploratory data analysis using tables.
- Select the appropriate visualization for an analytical output.
- Create the four most common types of charts and interpret their results.
- Build logical functions using IF AND OR to ask complex questions of data.





# Unit 3: Interpreting Data

## Interpreting Data

Introducing Interpreting Data

Statistical Thinking and Design

Interpreting Data Using PivotTables

Measuring Relationships Between Variables

## Project

Use correlation to measure interdependence between variables. Create a regression model to predict an output (given a certain input) and describe R-squared and how it relates to the regression line.

## Overview

Analysts use statistics to determine the significance of what their data is saying, whether they can confidently predict outcomes with it, and to what level of certainty. In this unit, learners will discover how interpreting data can lead to actionable insights businesses need to succeed.

## By the end of the sprint, participants will be able to:

- Recognize and avoid common data collection pitfalls and biases.
- Critique the survey and experiment design of a given scenario.
- Group PivotTable data for improved readability and analysis.
- Use “Show Value As” to quickly perform calculations on PivotTable data.
- Use correlation to measure interdependence between variables.
- Describe predictive statistics and how they are used.
- Create a regression and use it to predict an output (given a certain input).
- Describe R-squared and how it relates to the regression line.





# Unit 4: Communicating Insights

## Communicating Insights

Introducing Communicating Insights

Storytelling With Data

Designing Effective Visualizations

Beyond Basic Charts: Bubble Plots and Heat Maps

Planning Dashboards: Data for Everyone

## Project

Scope out the strategy and story of your presentation, apply color theory and Tufte's rules to visualizations, and plan a dashboard according to best practices.

## Overview

Insights gleaned from data don't serve much of a purpose if no one can understand them. In this unit, participants will learn how to communicate clear, succinct, and meaningful data stories.

## By the end of the sprint, participants will be able to:

- Explain why narratives are an important element of data analysis.
- Use the presentation canvas to plan your presentation.
- Explain Tufte's rules for good data visualization.
- Describe the three properties of color and how they convey meaning in data visualizations.
- Apply color theory and Tufte's rules to critique charts.
- Define the tenets of an effective dashboard.
- Determine the appropriate dashboard type and visualization based on a scenario.
- Use prioritization to organize and design a dashboard given a scenario.
- Evaluate a dashboard based on a scenario.





# Unit 5: SQL

## SQL

Introducing SQL

Getting Started With SQL

Exploring SQL Data With Basic Queries

Refining Queries With WHERE Clauses and Conditionals

Modifying Text Queries With String Functions

Handling NULL Values

Using Aggregate Functions to Summarize and Compare Data

Using CASE to Make New Fields

Joining Tables in SQL

Joining Multiple Tables in SQL

Writing SQL Subqueries

## Project

Perform a multi-step SQL query and export it to Excel. Use Excel to create calculated fields and PivotTables, analyzing the data to generate insights and a recommendation for your client.

## Overview

Every second, consumers generate massive amounts of data that businesses collect and store. But that data is useless unless we can use it to answer questions. Enter Structured Query Language or SQL — the language analysts use to unlock the power of data stored in relational databases.

## By the end of the sprint, participants will be able to:

- Explain what databases are and what they can do.
- Explain what SQL is and why analysts and businesses use it.
- Define basic data types in SQL.
- Conduct a simple data-pulling query using SELECT and FROM.
- Refine a query using LIMIT and ORDER BY.
- Properly use “=”, “!=”, “<”, “>”, “>=”, “<=”, “AND”, and “OR” in WHERE clauses.
- Learn four of the most useful string functions: UPPER, CAST/CONCAT, LEN, and REPLACE.
- Describe null values and how they impact a data set, as well as how to handle them.
- Perform calculations in SQL using aggregate functions.
- Use GROUP BY to organize summary information.
- Create new fields based on a set of specified conditions using CASE statements.
- Use JOIN functions to combine data across tables.
- Use multiple JOINS to combine more than two tables.
- Learn to plan out JOIN queries to prevent erroneous results.
- Explain what subqueries are and why analysts use them.
- Distinguish between the three types of subqueries and write your own.

